[preprint]aastex epsf $\gtrsim$ $\lesssim$ h^{-1}Mpc $_{\perp\|\mathrm{massNL}}\sigma_{\mathrm{P}}$Ł$_{\mathrm{LL}}$¶$_{\mathrm{PACRD}}$*RESCEU*−17/99,*UTAP*−329/99*SubmittedtotheAstrophysicalJournalCosmologi*

Cosmological redshift-space distortion on clustering of high-redshift objects: correction for nonlinear effects in power spectrum and tests with N-body simulations

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abstract We examine the cosmological redshift-space distortion effect on the power spectrum of the objects at high-redshifts, which is an unavoidable observational contamination in general relativistic cosmology. In particular, we consider the nonlinear effects of density and velocity evolution using high-resolution N-body simulations in cold dark matter models. We find that the theoretical modeling on the basis of the fitting formulae of nonlinear density and velocity fields accurately describes the numerical results, especially in quasi-nonlinear regimes. These corrections for nonlinear effects are essential in order to use the the cosmological redshift-space distortion as a cosmological test. We perform a feasibility test to derive constraints from the future catalogues of high-redshift quasars using our theoretical modeling and results of N-body simulations. Applying the present methodology to the future data from on-going surveys of high-redshift galaxies and quasars will provide a useful tool to constrain a geometry of the universe.